November 1990

approach

The Naval Aviation Safety Review

ACM Special Issue

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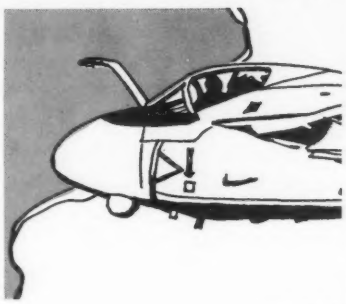
Vol. 36 No. 5/November 1990

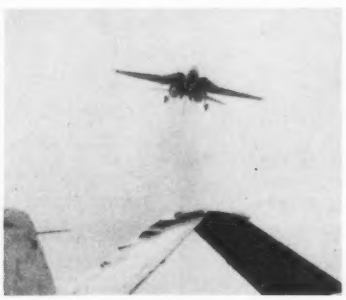
FEATURES

On the cover:
Shield's Up! Morgan Ian Wilbur created this fictional Mid-East action especially for this ACM issue.
Back cover designed by Frank L. Smith.

see page 3



see page 10



see page 16

see page 18

DEPARTMENTS

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Approach is a monthly publication published by the Commander, Naval Safety Center. Address comments, contributions and questions about distribution and reprints to:
Commander, Naval Safety Center
NAS Norfolk, VA 23511-5796
Attention Approach – Code 71
Telephone: Commercial 804-444-7416; Autovon 564-7416

"In a real fight, y

By Lt. Carroll LeFon

We hear about the high-level attention paid to the rise in pilot-error mishaps. We hear the calls for leadership, which translates into safety standdowns, NATOPS quizes and lectures. All these considerations serve their purpose, but I don't think that pilot-error mishaps occur because of a lack of technical knowledge, or even an inability to differentiate between right and wrong. These mishaps are caused by a blatant, ill-considered disregard of established procedures.

THE first two engagements in your 1 v 1 ACM hop have gone better than you expected. You've got some great guns video for your personal library. You can hear the frustration in your playmate's voice as he calls, "Speed, angels, tally-ho! Fight's on!"

The third fight starts like the others, each aircraft pulling hard for the initial shot. As the turn-in matures, you feel like you're past the first hurdle as the customary left-to-left head-on pass seems assured. Suddenly, his aircraft inexplicably pulls lead on yours. You see the belly of his aircraft and, in the microseconds left as his jet looms in your windscreen, you ask yourself how he could have lost sight of you from a two-mile setup. With 1,000 knots of closure, you wrench your aircraft out of his flight path in a loaded roll.

"Easy, easy," you call.

With the immediate crisis over, you return to the fight. The next pass looks good. He might have gained some angles in your hesitation during the NMAC. You bleed down to jam his shot and once again, you establish the left-to-left trend. Incredibly, he pulls lead once more. As you look for a safe escape path, you hear his "guns" call. It's a clear violation of the training rules, rules written in blood. You call "knock-it-off," bite back your recriminations and return to base.

Back in the ready room, you confront the other pilot. He seems proud that he tried to kill you. He says that you're training for combat and that the enemy won't feel bound by training rules. He shows you his HUD tape with the pipper on your aircraft.

"In a real fight," he gloats, "you'd be dead."

Shaking, you try to tactfully explain your point that his maneuvers were dangerous, that peacetime training involves tradeoffs between absolute realism and safety. His attitude leaves you dissatisfied and, after the brief, you go to the schedules officer and quietly ask that you never fly with this pilot again.

What else should you do? If you go to the Skipper or the Ops Officer, the other pilot could be grounded or even face a FNAEB. If you don't do anything, someone could get hurt.

You know that the right thing would be to tell the chain of command, but you're torn between conflicting loyalties. It

you'd be dead!"

General Dynamics, Fort Worth Division

would be easier to let the thing rest officially, but get the word out via the JO grapevine. This pilot wouldn't try something like he did with one of the squadron heavies. Not a perfect solution, but workable, right?

No, it isn't. As a Naval Officer and an aviator, we get special privileges. Anyone who has slept in until lunch after a late-night recovery, or taken his head-of-the-line privilege at the ship's store, in front of the troops, knows what I'm talking about. Along with those privileges comes responsibility.

I'm not telling anyone to be an informer, but the time comes when we JOs have to take the lead to make sure that no more of our assets and friends go down flying against unrealistic threats.

You don't have to be in this business too long to be able to count on your hand how many friends have died. And senior folks, like the CO and XO, probably have to take off their shoes to count their lost friends.

We hear about the high-level attention paid to the rise in pilot-error mishaps. We hear the calls for leadership, which translates into safety standdowns, NATOPS quizzes and lectures. All these considerations serve their purpose, but I don't think that pilot-error mishaps occur because of a lack of technical knowledge, or even an inability to differentiate between right and wrong. These mishaps are caused by a blatant, ill-considered disregard of established procedures.

Flight discipline is a generic term that includes tactical discipline: clearing your wingman's six, obeying radar contacts and staying in the pre-briefed formation unless you are cleared to deviate. Administrative discipline means

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keeping the UHF clear of garbage, making the rendezvous properly, flying formation when you are the wingman, and flying two (or more) aircraft safely when you have the lead. Many of our pilot-error mishaps and close calls occur in such relatively benign environments as lead changes, off-target rendezvous, and even straight-and-level air route spread.

Have you ever looked out to see your wingman crossing under your jet, head down, after a mild turn into him, or you couldn't find him? Flight discipline is merely doing what you're supposed to be doing, when you're supposed to do it. If you're the wingman, this means sticking to the pre-briefed game plan and not hitting your lead.

For flight leaders, it means briefing everything you intend to do and as many contingencies as you can think of. Brief your hop as though the CO was listening, and fly what you've briefed. If that 1+45 AIC hop turns into a 1+15 and you suddenly have 4,000 pounds above your ladder, and ACM wasn't briefed, stick with the AIC.

At safety standdowns, skippers ask, "Where will our next mishap occur?" They are also asking, "Who will be our next mishap pilot?" The average "mishap waiting to happen" isn't the brand-new nugget because he gets all the attention. He flies with the heavies, he isn't overconfident (the greenie board generally sees to that) and he is under the microscope.

No, the guy to worry about is the aggressive young JO with good hands and a bone to pick. He is eager to carve a name for himself, hasn't seen the pass he couldn't save, and wants to explore the edges of his plane's and his personal envelope. He is beginning to pull lead on the greenie board, flies the closest parade, flies nearer to the ground, presses the run looking for the best bomb, and doesn't let anyone get angles on him. He is, in other words, most of us, at different times in our careers. The good news is that he is also looking for acceptance among his peers as a good tactical aviator. It's this need for acceptance that is our best tool to mold him.

Start with the preflight brief. The JO section lead needs to set the tone with a thorough discussion of what he expects to see. Briefing the details and insisting on compliance with the brief will nip most flight discipline problems in the bud.

The debrief is the next important tool. Anything that happened during the flight that was contrary to the brief and not clarified in flight must be addressed. There should be emphasis on unbriefed maneuvers and problems with cockpit priorities.

Any indications of deliberate violations of flight discipline must be debriefed, tactfully if the situation warrants it, forcibly if required. Keep the "who" out of the debrief and accept criticism if it is warranted. Be credible. If you can't get through to your wingman, get help – at the lowest level possible. Your goal should not be to humiliate him but to exercise positive influence. Reaching the competence required to fly with your JO buddies is great and it should be fun, but it should also be safe.

There should be no new information here, and it may even sound like preaching. Unfortunately, the vast majority of mishaps occur when people who should know better do something without thinking it through. When someone augers in, it always seems that the mishaps board reveals that the mishap pilot's frequent breakdowns in flight discipline were known to his squadronmates. The real crime was that those who knew him best did not have the courage to say something before it was too late. ◄

Lt. LeFon flew F/A-18s with VFA-25. He is currently assigned to VF-45.

Anytime you are flying, nothing substitutes for sound judgment.

Ace L.

Controllability Checks?

By Capt. Leland P. Kriner, USMC

THE mission was a refresher 1 v 1 between two second-tour fighter pilots – a great way to spend an afternoon. In the first engagement, after three passes, the lead got a guns tracking solution then gave a knock-it-off call.

The second engagement went better for Dash 2 as he slowly gained ground on the lead. Approaching the third pass, Dash 2 had 90 degrees to go. At the pass, he pulled hard into the lead and crossed his target's extended 6 o'clock from 1,000 feet behind. He hit the lead's jet wash with about seven Gs on his airplane and violently departed over the top.

Dash 2 slowly recovered from the departure and leveled off at 15,000 feet MSL and 350 KIAS. The aircraft was sluggish during the recovery. After the lead rejoined, he confirmed what Dash 2 suspected: The Hornet's right trailing-edge flap had ripped from the airframe, and the right aileron seemed to be warped.

The flight declared an emergency and called squadron base. The squadron suggested a controllability check before recovery. After the check, the two fighters recovered safely.

What are the NATOPS procedures for a controllability check? NATOPS doesn't specify how to do the check. Where do you look? You should have a well-considered gameplan before you even strap on the airplane.

How many flight leads have briefed the requirement for controllability checks *after* structural damage or the appearance of flight control problems? Does the nugget wingman know what to do? Ask them what *their* game plan is. Their answers might surprise you, or in some cases, even frighten you.

I hope the following list will start your discussion. It is not intended to be the end-all cure. Each aircraft community should discuss its unique performance characteristics and develop general guidelines that are for its specific aircraft.

First, what is minimum controllability? "Minimum controllability" exists when the aircraft does what the pilot tells it to do, with sufficient control authority still remaining to counter any uncommanded pitch, roll or yaw excursions, and can be safely put on the deck.

Now, here are a few considerations for a controllability check.

– Do the check over a relatively clear area.

– Reduce speed slowly in 5- or 10-knot increments. As the speed reduces, the angle-of-attack should be checked and compared to known airspeed and AOA numbers in NATOPS. The pilot should be able to tell how badly his plane is damaged.

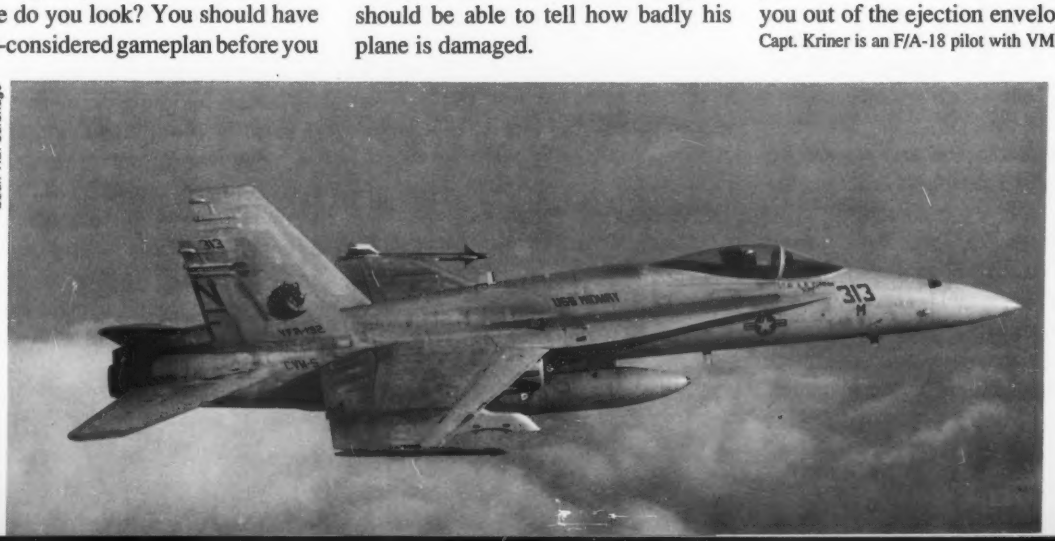
– During deceleration, don't slow to an airspeed that requires more than one-half stick or rudder deflection to keep the wings level. If you reduce airspeed beyond this point, you greatly reduce your ability to counter uncommanded pitch, roll or yaw. This is especially critical during the landing sequence.

– Lower the flaps to half. Most aircraft have optimum lift-to-drag conditions at half-flaps. Drag increases greatly when you lower the flaps from half to full, while you gain only a small amount of lift. Also, lowering the flaps may result in large pitch or roll excursions depending on the type and location of damage.

– Once you've got the aircraft slowed to an airspeed at which you can make a safe landing, don't go any slower. Many pilots don't consider this point. You gain absolutely nothing by reducing the airspeed further; you lower the stall margin and may depart from controlled flight.

– Don't push it. If the plane is minimally controllable, bring it back. However, if it isn't, consider ejecting. Make an honest evaluation at altitude. The time to find out that you made a bad decision is not at 1,000 feet AGL as you lose control and the aircraft rolls you out of the ejection envelope. ◄

Capt. Kriner is an F/A-18 pilot with VMFA-122.



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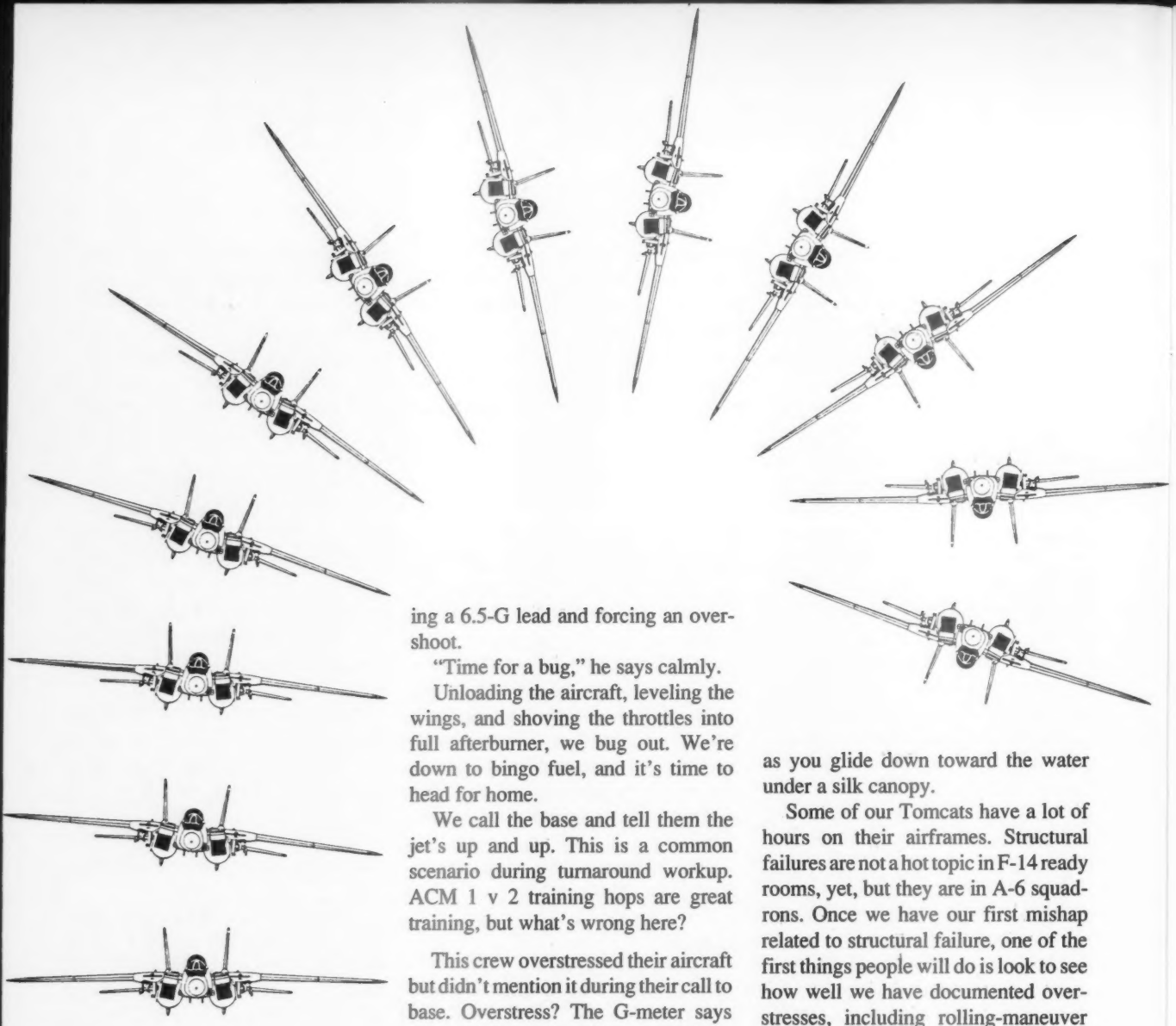


Rolling Gs

By LCdr. Chuck Lewis

ONE more second and we can be saddled in for a great guns shot on this A-4.

"Check left, 9 o'clock low," I warn. "It's an F-16. His nose is coming on!"

We knew the guy was out there, but we didn't see him at the pass. My pilot has few options, so he throws the stick left into the pursuing bogey, maintaining a 6.5-G lead and forcing an overshoot.

"Time for a bug," he says calmly.

Unloading the aircraft, leveling the wings, and shoving the throttles into full afterburner, we bug out. We're down to bingo fuel, and it's time to head for home.

We call the base and tell them the jet's up and up. This is a common scenario during turnaround workup. ACM 1 v 2 training hops are great training, but what's wrong here?

This crew overstressed their aircraft but didn't mention it during their call to base. Overstress? The G-meter says 6.5 Gs. That only indicates acceleration at the meter's location, not along the right wing, in this case. While the left wing had less than 6.5 Gs – maybe as little as 3.5 Gs – the right wing had a lot more than 6.5 Gs, closer to its structural limit of 9.75 Gs. The F-14 is currently limited to 5.2 Gs in a rolling maneuver.

You might not think it's important to report such an overstress, but what about the safety of the next crew that flies this aircraft? Better yet, what if you are in the aircraft when the right wing falls off?

"What a piece of junk!" you'll scream as you glide down toward the water under a silk canopy.

Some of our Tomcats have a lot of hours on their airframes. Structural failures are not a hot topic in F-14 ready rooms, yet, but they are in A-6 squadrons. Once we have our first mishap related to structural failure, one of the first things people will do is look to see how well we have documented overstresses, including rolling-maneuver overstresses.

All F-14 squadrons address weight-limitation restrictions during their briefings. They know that they can put 6.5 Gs on their aircraft after burning down to a certain fuel weight. But how many of them brief rolling-G limits, much less adhere to the appropriate number of Gs during the maneuver? Truthfully, we don't hawk the G-meter when we're trying to keep from getting our brains gunned out.

When the fight's over and you've overstressed the aircraft with rolling-Gs, gripe it.

LCdr. Lewis is a RIO with VF-51.

Out-of-Control Flight:

The Backseat Perspective

By LCdr. Cliff Driskill

DURING the last 10 years, the Navy has lost 19 F-14s due to out-of-control flight (OOCF). Primary causal factors were application of pro-spin controls and poor crew coordination. The Tomcat crews encountered OOCF when they failed to recognize the difference between departure from controlled flight and a steady-state spin.

The key words to spin analysis are "fully developed." The pilot can't be spring-loaded to apply inputs without critically analyzing the situation. Correctly reading angle-of-attack and the turn needle is crucial. These primary indications determine whether departure is upright or inverted, and the direction of the spin. One other bit of information is necessary – airspeed. If the aircraft is accelerating through 170 knots, it can't be spinning. Now is not the time to apply pro-spin controls.

What can a RIO do in a departure? The following list is not all inclusive, but it can be a starting point for discussion and possible incorporation into SOP.

The RIO should back up the pilot with the initial procedures, "neutralize!" Then, "lock that harness!" Now he needs to help the pilot analyze the indications. Is the turn needle pegged? Is the airspeed increasing, or is it fluctuating below 150 knots? Is the angle-of-attack pegged in one direction? The answers must be quickly determined and exchanged. Remember, crew coordination is vital. Pro-spin inputs *can* be prevented.

As 10,000 feet AGL approaches, the crew must make their decision to eject. The altimeter does not provide indications for spin control, and the RIO must call out the altitudes to keep his pilot from flying into the ground or water.

Finally, the RIO should verify stick position by checking – if G forces permit – spoiler position. If the call is neutral, the spoilers should be down. If the RIO is to give timely corrections, he needs to be as cognizant of the situation as the pilot. Bad information during OOCF is worse than no information. ◄

LCdr. Driskill is a RIO with VF-21.

Mr. Toad's Wild Ride

By Lt. Jack Fields

A-4 asymmetric slat extension is a hot topic these days. Suggestions for dealing with the problem range from inserting restraining devices to keep the slats from fully retracting, improving current slat maintenance procedures, to bolting the slats up to prevent any extension at all.

THE weather was estimated 2,000 broken, with solid clouds up to 13,000 feet. We briefed for a 2 v 2 against F-14s from our West Coast base. As our two A-4s entered the TACTS range, we saw that the hard deck would be 18,000 feet because of the solid overcast at 13,000 feet – not the best weather for ACM, but with experienced crews, we could proceed.

We checked onto our CAP station and did our slat checks. The fight was on, and we began our run in at 28,000 feet to give ourselves plenty of maneuvering room after the merge. We arrived at the merge at 360 knots, with one Tomcat in sight. As the wingman, I extended to pick up the second F-14 while my lead engaged the first bogey. Seconds later, I spotted the wingman and began a slightly nose-high left turn to bleed a little airspeed to extend my slats. That's when the fun began.

I was having a little difficulty getting the slats to extend symmetrically, which should be expected at high altitude. I could handle it. The right slat extended while the left slat remained up. My A-4 began a gentle left roll. This was not a violent slat departure, but a docile roll, slightly nose-up. I countered with a little right stick and left rudder to get the left slat extended, but it did not want to come out and the nose-low attitude was increasing. I realized I had a serious problem. I tried unloading to get the right slat to retract without success. The overcast was now 15,000 feet, which didn't help the situation.

As the aircraft continued to 90-degrees, nose low, in a left aileron roll, I pulled the power to idle and extended the speed brakes to keep from accelerating. The airspeed was now at 320 knots. Extending the speed brakes slowed the A-4 to 300 knots which was better for getting the slat to extend or retract.

I applied full left rudder and kept the stick neutral. Passing through 20,000 feet, the left slat extended fully – much to my relief – and I began to recover. During the recovery, however, I eased the angle of attack and, incredibly, the left slat retracted! The plane's nose went down, and I entered a left-aileron roll. I put in full left rudder again, and the left slat extended once more.

I began to recover again, this time keeping optimum angle of attack (15.5 units) and a little left rudder in until I had fully recovered. The aircraft bottomed out at 13,000 feet, about 50-100 feet above the overcast. The whole thing took 8-10 seconds, and I had lost 14,800 feet.

After more than 1,800 hours of flying, this was the first time I had thought about ejecting. The only reason I recovered was because of a recent squadron mishap where we lost a TA-4 under similar circumstances. The squadron did a lot of research to determine the cause of the mishap and to prevent it from happening again. I did some flight testing that told me that rudder in the direction of the roll would definitely help that slat to extend.

If you slow the A-4 down to where the slats are about ready to extend, and push on the rudder a little, the corresponding slat will come out every time. During my slat departure, I was convinced that left rudder was the correct procedure to recover. A-4 NATOPS says to relax G to get the slat to retract. If that doesn't work, NATOPS says to counter the roll with opposite stick and opposite rudder.

From the research we conducted for our MIR, we determined that these control inputs were based on an aircraft in level flight, not an aircraft in extreme nose-low attitude. No flight testing had been made in that regime. (Test pilots ain't dumb.)

Since my wild ride, I have talked to two other pilots who have had similar experiences with slat departures. What is interesting is that none of us used the same method to

recover. One unloaded until he was out of his seat. As a last-ditch maneuver, the second pilot tried to unload without success, and finally pulled on the stick as hard as he could. And then my recovery where I applied rudder in the direction of the roll.

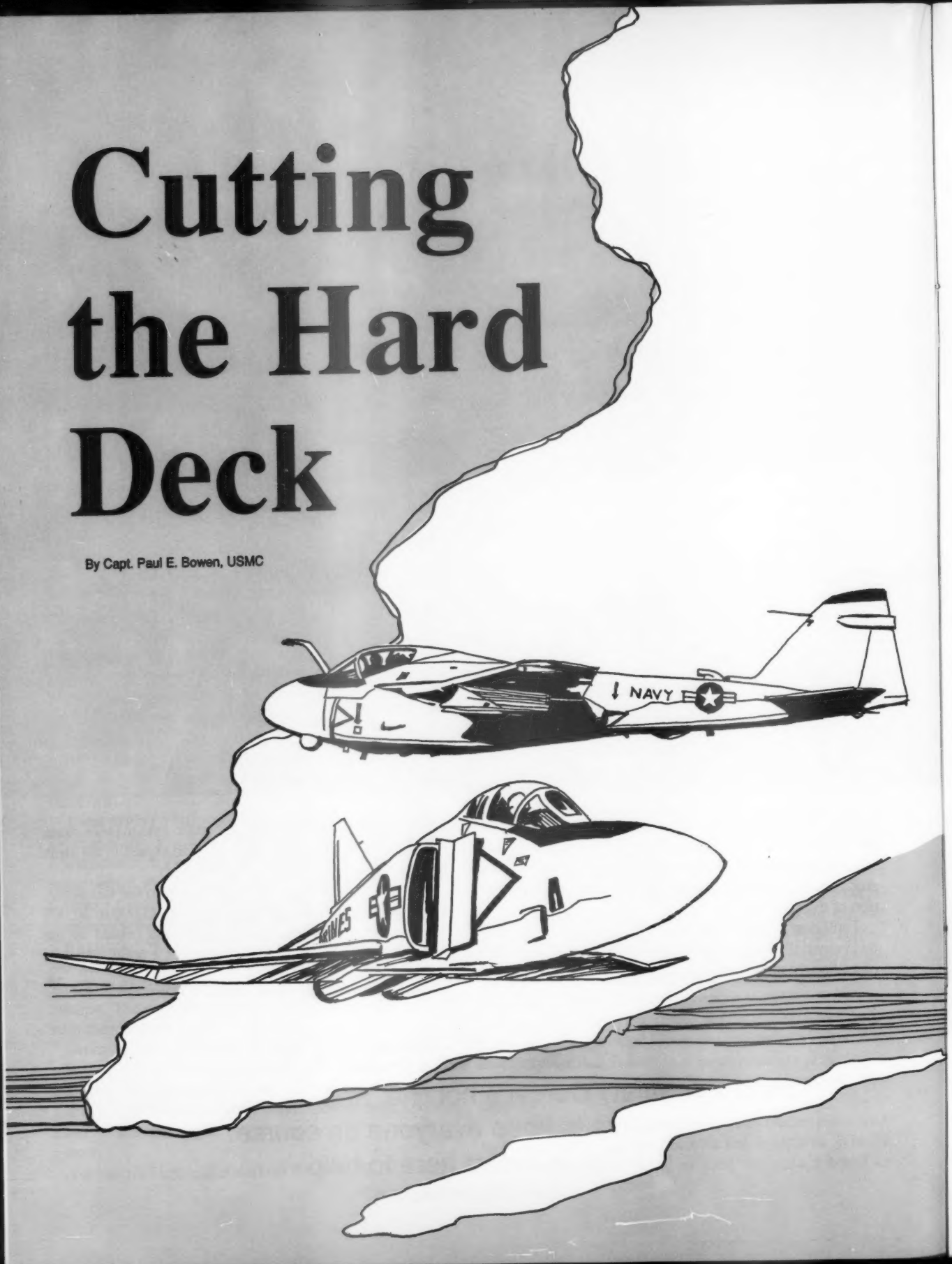
I still don't know which is the best method to get out of this potentially hazardous situation. I do know that all three of us thought we would have to punch out of our A-4s. I also know that I was able to get the left slat to extend twice using the rudder-into-the-roll method. If I find myself in the same situation again, that's how I will recover.

There are many similarities, however, in the slat departures I know of. They all started between 25,000 to 30,000 feet, and they all began with a gentle roll caused by the extension of the opposite slat. And at some point, all pilots considered ejecting. ◄

Lt Fields flies the F-16N and A-4 with VF-126.

Cutting the Hard Deck

By Capt. Paul E. Bowen, USMC



WE briefed our 1 v 1 DACM hop and launched. Our hard deck would be 5,000 feet AGL or above the lowest cloud layer; this deck was regulation for high-speed, low-AOA maneuvering.

We couldn't see the horizon during our climbout until we passed 8,000 feet MSL. The haze made it hard to determine visibility. We discussed raising the hard deck to 13,000 feet MSL which meant starting the engagement at 18,000 feet instead of the briefed 10,000 feet.

The F-4 turns like a pig above 15,000 feet; however, and we would be sitting ducks for those Intruder guys. Did we want to give up our performance advantage for a higher, safer altitude?

"Hey," my experienced RIO said, "it's DACM. The hard deck is 5,000 feet. It's OK."

With that bit of false security, we pressed on with the first setup. At five miles, our GCI controller called, "Merge plot." We didn't have radar contact, and neither aircraft could see the other until we were within two or three miles. Then the fight was on.

We passed left-to-left. My Phantom had 420 knots. I selected burner and put the F-4 into 100-degree, left bank for a six-G, nose-low slice turn. My face and helmet were glued to the left side of the canopy. The A-6 seemed to make a nose-high left turn at our 6 or 7 o'clock.

My RIO said, "We've got 450 knots. Get the nose up."

I relaxed the turn and took out what I thought was all our nose-down attitude. Meanwhile, I was "padlocked" onto the Intruder.

Three things went wrong at the same time. First, the backstick required to turn the Phantom at six Gs increased. The controls began to feel stiff (we were still accelerating.) Second, the A-6 crew called "Lost sight" (about the same time I did) as we plunged into the undercast. Finally, my RIO yelled, "We're going through 3,000 feet! Pull up, pull up!"

I went back into the cockpit and saw he was right. The altimeter was passing 2,700 feet. At 2,600 feet, the altimeter's hands jumped as the shock waves hit the aircraft and the pressure flux cross the static ports. I didn't have to see the airspeed indicator to know we had gone supersonic.

I pulled the throttles to idle, extended the speed brakes, leveled the wings and went to a five-G pull. I seem to recall that we were 30 to 35 degrees nose low at the start of the pullout. All I could hope was that I didn't yank the wings off the airplane.

The altimeter bottomed out at 1,500 feet MSL. At idle and Mach 1, the Phantom had enough energy to zoom-climb back up to 15,000 feet. After I leveled off, I thought about how close I had come to killing myself – and my RIO. I found out later that my backseater had had his hands around the lower ejection handle and would have pulled it if he had not felt the Gs during my recovery. I doubt whether we would have survived the ejection.

During the debrief, the ACMR tapes played back our near-miss with the Atlantic Ocean. After I was chewed out, I went on to become a master in ACM. Just ask me. . . .

If we had not recovered, I'm sure the mishap board would have included pilot error and violation of training rules as causal factors. The board would have probably also mentioned supervisory error – failure of the safety observer looking at the live ACMR telemetry data to make a knock-it-off call.

I can't remember if someone was monitoring our engagement; nothing was said during our plunge through the hard deck. Actually, after we looked at the tape, we could see that the situation deteriorated so quickly that a safety call might not have been in time.

Two crewmen are better than one. I might never have known what was happening before I hit the water at Mach 1.0. In the F-4 simulator, a loss of situational awareness (SA) can happen if the pilot "chases" the symbols in his primitive HUD at the expense of his instrument scan.

The RIO usually keeps everyone out of trouble by backing up the pilot's scan. The advanced HUDs in the F-16 and F/A-18 have taken some of the risk out of flying intercepts in IMC, but only when the threat is in the forward quarter. Once merge plot occurs, the pilot's primary scan goes outside the cockpit.

During peacetime training, the ACM training rules help us hone and renew our perishable skills. If the weather does not meet your briefed parameters for medium-to-low altitude engagements, fess up, then bump it up.

Capt. Bowen is a T-2 instructor with VT-19.

The S
Also R

By LCdr. Mark Danie

THE mission was 1 v 1 ACM. After a quick donut and coffee, Dragon walked to Maintenance Control to review the ADB. He looked at the discrepancies which had been signed off.

"UHF weak and garbled, R/R UHF, TACAN weak – breaks lock. Could not duplicate; ops checks good on deck." Looked like another typical day for a 25-year-old A-4F.

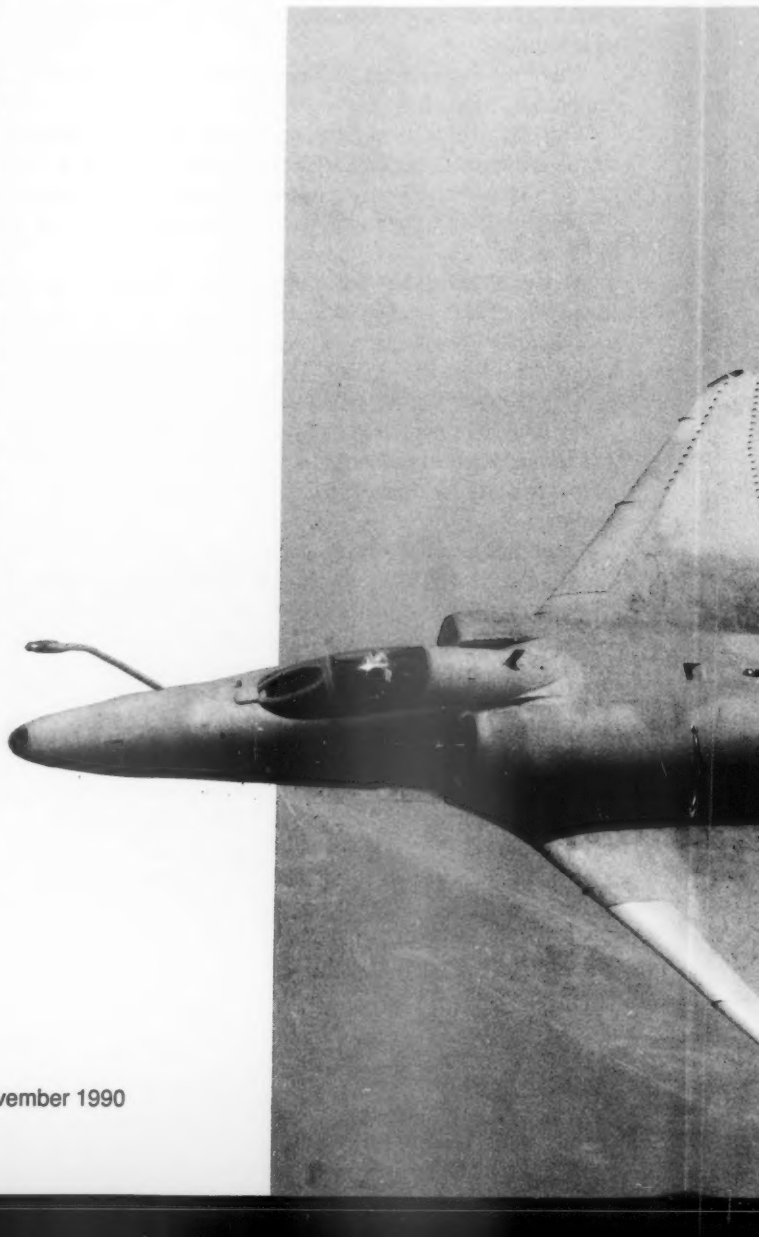
After start-up, Dragon checked his wingman's status and taxied. The two aircraft met in the hold short. The final checker gave each a thumbs-up, and Dragon called the tower for takeoff. Since this was the first launch of the day, the tower asked for a PIREP.

After takeoff, they climbed to 15,000 and Panther, Dragon's wingman, took the lead while Dragon set up for eyeball cal and a snapshot drill. Dragon noticed that his TACAN broke lock a few times. Selecting the "tail" position for the antenna seemed to settle the instrument down. What Dragon *didn't* see was a slow precession in both heading gyros.

Once in the area, they each took a 40-degree split to achieve separation for a butterfly set-up. After Dragon called the turn-in, Panther replied that Dragon's transmission was growing weaker, although he was still readable.

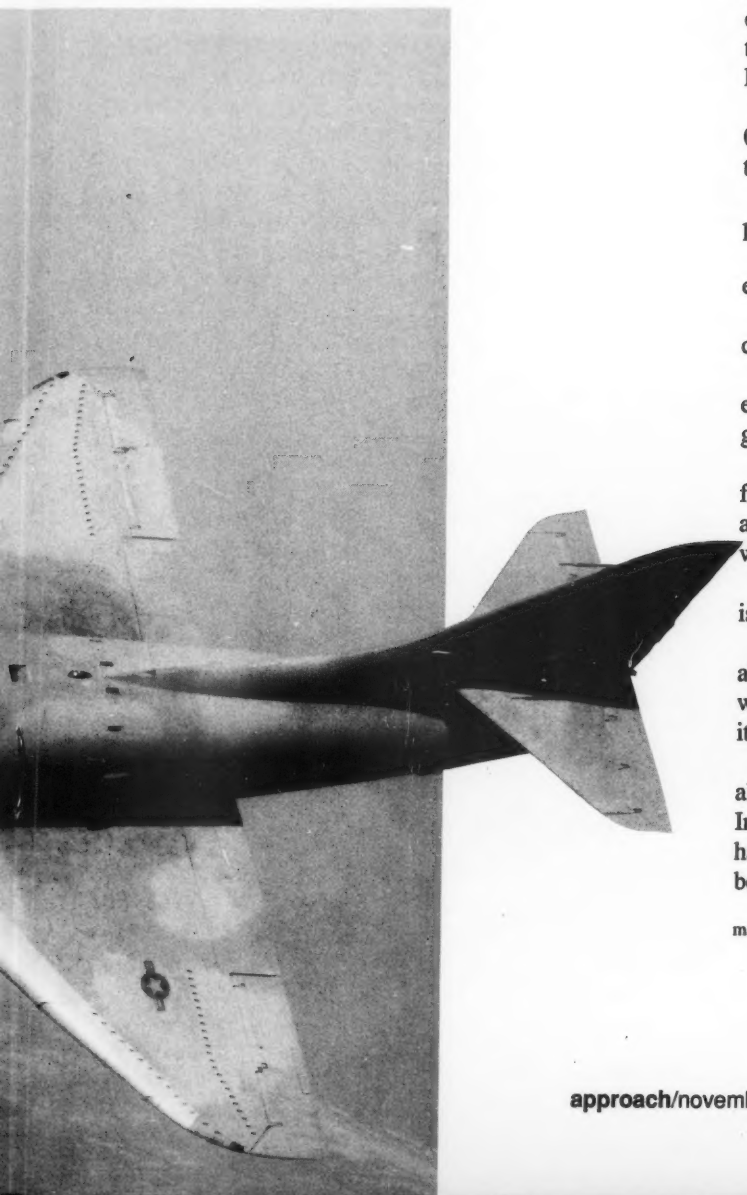
Dragon thought how easy it would be to keep his opponent in sight against the white undercast, and he planned to work the vertical, taking advantage of his A-4's small target set against a low sun. At 350 knots, Dragon passed Panther left-to-left, 500 feet abeam.

"Fight's on!" he called and quickly leveled his wings, pulling hard to the vertical, followed by a quick right bank to 135 degrees after reaching 60 degrees, nose-up. He wanted to go one-circle with Panther. Fortunately, the A-4's slats came out smoothly as the aircraft decelerated, significantly increasing Dragon's turning ability. He was easily making angles on Panther who was arcing in a level turn.



e Sun Rises

. Mark Danielson



Dragon assumed that his adversary had lost sight of him because within 270 degrees of turn, Dragon was saddled-in at his six. "Atoll . . ."

The second and third engagements were dominated by Dragon just as the first fight had been. He felt invincible. He countered everything Panther tried with ease. Finally, Panther cried uncle for gas, and the two Scooters prepared to RTB.

Dragon took the lead and took up the standard heading of 090 out of the area. "Should be a real short debrief," he teased Panther.

As Dragon continued to reflect on his own dogfighting prowess, Panther said, "Check your heading."

What? Hey, join up and shut up, wingie. "I'm heading east."

"I'm showing 270," Panther replied. "Check your wet compass."

Dragon reluctantly complied and, to his shock, discovered that Panther was right. They were headed west. The gyro had precessed 180 degrees out!

Panther took the lead and brought the flight back into the field. As they walked back into maintenance control, Dragon asked Panther what had cued him that they were headed the wrong way.

"I noticed the sun was in my mirrors, and at 0800 the sun is definitely rising in the east."

Dragon's professional embarrassment caused him to think about the incident for the rest of the day. What if the wingman had not caught the error? Would they have made it to Hawaii?

Regardless of how high-tech cockpits get, safe aviators always cross-check information and never forget the basics. In a real-world situation, becoming an ace would certainly have less impact if the pilot flamed out on the way home because he got lost. ◄

LCdr. Danielson is a Topgun graduate and is currently on the staff of Commander, Fleet Logistics Support Wing.

Rules For Survival:

An Adversary Pilot's View

By Lt. Pat Hall

"FIGHT'S on!" OK, let's see how this fighter handles an A-4 bogey loaded with sticks and stones.

"Left-to-left," the fighter calls.

Good, he's defined the pass. Now it's time to work on my game plan and energy state. Here comes the merge. Boy! That was close. I hope this guy knows what he's doing. Way to go, nice initial move for a two-circle flow. I don't want to see the fight end too quickly, so I reverse my turn to force a one-circle flow. He can't possibly get a shot. There's no more than 6,000 feet separation. Here he comes, nose on. He must be trying for a boresight tone. Whoa!

"Left-to-left!" I emphasize it this time and make an exaggerated turn to the right. Again, I force a one-circle turn. It's painfully obvious that he has no fear of death as, once again, with minimal separation, he boresights me.

"Fox Two," he calls.

"Knock-it-off." I've had enough of this!

Does this sound like your last 1 v 1 with your local adversary squadron? I hope not.

Training rules provide guidance for safe, mishap-free ACM. Many of these rules are common sense; some come from experience and incidents over the years. But, others come from the loss of aircraft or aircrew.

A few training rules seem to be intended for peacetime operations, but they are actually based on sound real-world considerations. Two of these rules involve forward-quarter missile attacks and gun attacks.

OPNAVINST 3710.7M says that all fixed-wing, forward-quarter missile attacks (within 20 degrees of the target's nose) will be broken off at a minimum of 9,000 feet. Inside 9,000 feet, the pilot will devote his attention to maintaining flight separation.

With today's all-aspect weapons, pilots sometimes press forward-quarter missile attacks inside the 9,000-foot limit. I can't count the times I have heard fighter pilots say, "I would have taken that shot real-world," or "That would have been a good shot if it was real-world."

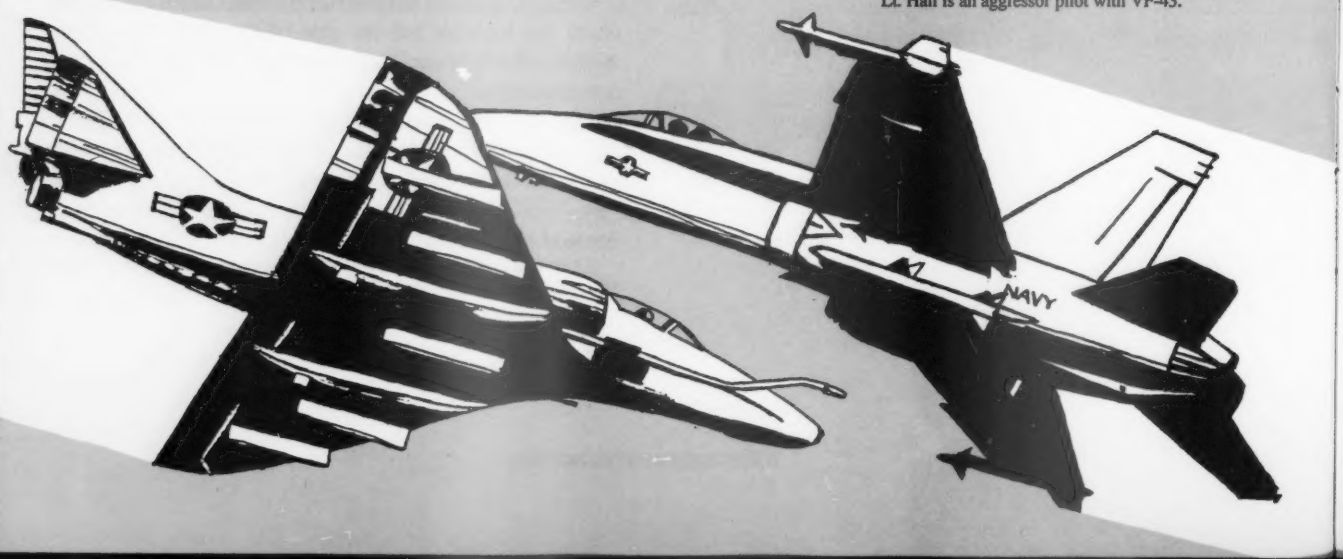
Set the parameters for the shot and examine the results. Let's assume you take the shot at 8,000 feet, nose on, with a target aspect of zero degrees, and a closing velocity of 1,000 knots. The fighter would hit the bogey in 4.8 seconds – whether the missile worked or not.

Assuming a 0.5-second launch-to-eject timeframe, when the missile left the aircraft, you would be 7,100 feet from your target and 4.3 seconds from impact. Once the missile is in flight, you have 2.4 seconds before it hits the target. To avoid the bogey or the debris from its explosion, you must use the remaining time to aggressively maneuver your aircraft. Even max performance won't sufficiently alter your flight path in that short time.

Again, 3710.7M says that fixed-wing gun attacks will be broken off at a minimum of 1,000 feet, or will not be made over 135-degrees track-crossing angle. How about that forward-quarter gun attack within 45 degrees of the nose? This tactic would be one of the most intimidating maneuvers a fighter pilot could use in the visual arena. But some of the same evasive considerations we discussed in the missile attack also apply here. Establishing sufficient lead to successfully complete a forward-quarter gun attack would put you in a bad position if the attack failed.

You can see that some of our training rules may not be so far from the real world. ◄

Lt. Hall is an aggressor pilot with VF-43.



One Eagle, Over Easy!

By Capt. Jim Shaw, USAF

IT was a great day for flying. The sun was coming up and the sky was clear. During the flight brief, I emphasized the hazards of disorientation when flying and fighting over water on such a bright, clear day.

Right after engine start, my wingman said he was a ground abort. We restructured the flight for three players. As the attacking single, I realized my eyeballs were going to get a workout since my radar had gone down and we didn't have GCI.

The first three engagements went well, but on the fourth, I got a long-range tally and got on my target's tail without being seen. I pressured my quarry for a while, but when his wingman came in, I set up for a snap shot and separation.

The fight had descended to the 5,000-foot floor, and I had to pull my nose up to stay above the hard deck during the separation. The wingman tried for a "heater" – a Sidewinder shot – so I made an idle break-turn. "Betty" began warning about fuel just as I heard "Fox Two, kill." Everyone was behind me, and I went into the cockpit to reset the bingo bug. It was time to go home.

As I looked back outside, I heard the gear warning tone. Looking back at the HUD, I pushed the power up and pulled the nose through the horizon. I didn't realize that what I thought was the sky was actually water. Instead of being nose high, I was nose low! Because of the geometry, as I looked back over my shoulder, the element was precisely where it should have been.

Another look at the HUD (slightly washed out in the sun) confirmed my seat-of-the-pants feeling of being nose high with enough airspeed (still actually nose low). Another check on the element told me something was wrong. I saw the belly, not the top, of the other F-15s. Another look out front and all I could see were waves!

My brain shifted to automatic and, with both hands on the stick, I rolled and pulled as my ADI spun from black to white. I knew my altitude was low, and since I couldn't see the airspeed, I kept the throttles at military. Betty went ballistic as my head buried into my lap. I knew I was dead. As the airspeed decreased, so did the Gs, and I realized I was going to make it. The altimeter was climbing through 1,500 feet as I called "Knock-it-off," and headed home.

The postflight film review showed I began recovery from 70 degrees, nose low, at 2,600 feet MSL. The aircraft recorded 12.5 Gs (!) on the overload warning system (OWS). The lowest point during the pullout was 420 feet over the water. Light fuel weight, a fairly straight pull, and the Eagle's strength resulted in the aircraft flying again in two days.

Had I been over land, had there been a few clouds, or even a midday sun, I would never have gotten into this predicament. But it's important to realize that it can, and did, happen. I did what I had to to save my life and the aircraft.

Capt. Shaw is an F-15 pilot with the 33rd TFW/SEF at Eglin AFB.

Engaged S

With 27 knots of wind down the angle, I figured that the burble would slow us down sufficiently to get the optimum 14 units AOA. The technique worked perfectly and we trapped.

LATE afternoon in the Gulf of Oman. The sun was low as my wingman and I began our third 2 v 2 AIC-ACM engagement against our sister squadron. My RIO immediately called out two contacts bearing 110 degrees at 20,000. We took side-by-side locks and made a flawless bracket. I had both bogeys in sight at the merge, and I decided to go for the one on my side. At military power and 450 knots, I made a 30-degree, 4.5-G, nose-low slice. As the bogey tried to take out the angles, all hell broke loose in my cockpit.

At first, there was a loud bang, similar to the sound of an engine compressor stall. Not surprisingly, the bang was quickly followed by the stall-warning tone and left engine-stall light. I rolled wings level, unloaded and throttled both

PH3 Haley

Stall

By Lt. Steve Saxon

engines to idle. I checked the engine instruments and warning lights. The left engine's rpm was decaying below 65 percent, and the TIT was rising well above 1,200 degrees C. I secured the engine immediately and headed toward the carrier.

As my wingman checked me over for leaks or damage, I re-checked my instruments. There were no advisory or warning lights, except for those associated with securing an engine. The Bi-Di pump was working and other than flying single-engine, the F-14 felt normal.

My wingman gave me a thumbs-up. The left engine's TIT was below 400 degrees, and I decided to try a crossbleed engine start. The engine started normally and stabilized at 68 percent. The oil and hydraulic pressures read normal. There were no warning lights and everything seemed to be in order.

After watching the indicators a little longer, I slowly advanced the left throttle to military. The engine did not respond. The rpm and fuel-flow indicators remained at the normal idle positions. Thinking there might be a throttle disconnect, I reverted the throttles to manual and tried again, without success. We had a definite problem.

As we flew toward the ship, 60 miles away, we talked to the squadron rep. After five minutes, with my throttle still in military, I noticed something peculiar about my gauges.The rpm was slowly creeping up above 80 percent, but my fuel flow remained at 1,100 pph. As the rpm exceeded 80 percent, there was another loud bang with stall warning indications. Again, I secured the engine. I was beginning to think seriously about a single-engine approach.

Since the combined side of the hydraulic system was now being held up solely by the Bi-Di, I was concerned that I might lose the system. I immediately stowed that ramp, dropped the hook and put out the refueling probe. My RIO started going over single-engine emergency procedures.

After talking to our rep and the Boss, I had another problem come up. We were developing a substantial fuel split between the engines. The left side was full with 800 pounds still in the wings. The right side now showed 4,500 pounds with 300 pounds in the wing. Though not of immediate concern, the split was definitely worth watching. I selected the high side on the fuel switch to affect fuel crossfeed transfer. The transfer was slow, but it worked.

While the Boss launched everyone early to clear the deck for us, my RIO and I went over the single-engine procedures carefully. Since the engine seemed to operate normally at idle, we decided to try another relight. This time, we were going to leave the throttle at idle.

Like before, the relight went fine and everything seem normal. Our wingman gave us another check. Now, we had another problem: The burner cans were starting to get wet. As he spoke, a 15-foot flame shot out of the tailpipe. The engine was on fire! We had no indications in the cockpit. I secured the engine for the last time and pulled the fuel shut-off handle. The fire went out quickly, and we were stuck with making a single-engine approach.

After getting our charlie, we dirtied up and established a nice, long straight-in approach. We had two drop-tanks and a 2-2-0 loadout. Bullseye was up, and the sun hadn't quite set yet. We dumped down to 6,500 pounds internal fuel, intending to reach 5,500 on the ball. Since speed is life, we flew most of the approach at 150 knots. I trimmed in full, right rudder to counter the increasing yaw, but I still needed a boot of rudder to keep the nose straight.

With the final bearing in direct line with the low sun angle, lineup deviations were hard to see. As we approached the ship from one mile, I slowed to less than 12 units AOA. I didn't want to get any slower. With 27 knots of wind down the angle, I figured that the burble would slow us down sufficiently to get the optimum 14 units AOA. The technique worked perfectly and we trapped.

After I secured the engines, the maintenance troops went to work. There was a large pool of engine oil near the burner rings. The oil, along with the fuel, probably caused the fire. Closer inspections revealed that the turbine section had suffered a catastrophic internal failure. The blades had completely disintegrated. The No. 6 oil seal was blown, and we had lost nearly two gallons of engine oil. ◄

Lt. Saxon is an F-14 pilot with VF-114.

Although this pilot did not specifically go against NATOPS, he probably would have been wiser to try to restart the engine once, and when that didn't work, to shut it down for the remainder of the flight. – Ed.

GLOC:

Tips From the Incredible Hulk

By Lt. Robert Lamanna, MSC

"ME, lift weights? I don't have the time. Between my squadron paper work, briefs, and flying, I'm lucky just to stay in shape for the PRT!"

How many of us have said we'd start an exercise program but never do? While we may have escaped G-related problems in previous aircraft, in some aircraft, today's ACM takes us through more than 7 G's. We don't have to look far ahead to see the next generation of aircraft with their higher weight-to-thrust ratios. It's time to put that New Year's resolution into effect.

Weight training increases your G tolerance. It will add muscle mass to your body, allowing you to withstand the rigors of ACM. You'll be able to keep your head on your shoulders when high G forces pull it out of position.

Picture yourself in a 1 v 1 engagement at 27,000 feet. The air is crystal clear. Tally! The bogey is coming at you. At the pass, you break into a hard right bank, attempting to lock up. At that point, you have to ease the turn because you're losing sight of him. While you regain your composure, the bandit swings in for a gun solution. A weight training program could have helped you pull those extra G's and win.

Weightlifting is a big part of your G-tolerance program, but the results you gain from lifting must work in conjunction with a proper anti-G straining maneuver (AGSM). There are two parts to the AGSM. First, there is an isometric contraction of leg, arm and chest muscles to help your G-suit squeeze blood to the heart. This is where the weight training comes in: it builds muscle mass to constrict blood vessels in your arms and legs.

Second, a specific type of breathing must accompany the contraction. Take a deep breath and say the word, "hook," holding the "k" at the end. You force the back of your tongue against the back of your throat, effectively closing off your windpipe. At this point, you increase the pressure within the chest by trying to exhale against the closed windpipe. You put pressure on the heart and force the blood to your head, keeping yourself awake and alive. It is a timed AGSM, three seconds on the "hook," then a rapid, forceful exhalation and inhalation to bring more oxygen into the system.

If you perform this maneuver in too short a cycle, you will tire out the breathing muscles and possibly cause hyperventilation. Too long a cycle does not allow for adequate oxygen exchange and "pump starvation" may occur. So, timing is important.

What other ways can you improve your G tolerance? If your G-suit fits like a comfortable pair of jeans, it's time for a refit. The G-suit should fit nice and tight without restricting blood flow. A loose G-suit is no good.

Also, check your G-suit connector between engagements. You need all the help you can get, and a defective valve provides no pressure to the suit.

Here are some reminders for preflight as an ACM anti-G warmup.

1. Do a little stretching before heading to the aircraft or during preflight checks.
2. While strapping in, check your G-suit connection and pressure to protect against a faulty G valve.
3. While taxiing, continue neck stretching against resistance, but don't overdo it.
4. Do a few AGSMs in flight before ACM.
5. Do a few 3-5-G turns to warm up.

Here's another plug for weight training. Your aircraft is in an out-of-control spin and the centrifugal force has pinned you forward in the cockpit. Do you have the strength to get back into proper ejection position or to pull the handle? It's possible that your lack of strength could force you to eject out of position, resulting in spinal compression fractures. The additional muscle mass can also protect you from the violent kick of the ejection.

Physical fitness increases your capability in the air. We've got faster jets; we need stronger bodies. Full squadron involvement is vital to the overall acceptance of this training concept. If you need a starting point, call your local physiologist. He'll be glad to help. Pump up to stay up! ◄

Lt. Lamanna is an aerospace physiologist at NAS Norfolk.

Safety thought:

I use not only all the brains I have, but all I can borrow.

Woodrow Wilson

Left to right: Lt. Walter S. Jones, LCdr. Jeffrey "R" Smith

LCdr. Jeffrey "R" Smith
Lt. Walter S. Jones
NAS Sigonella

LCdr. Smith (IP) and Lt. Jones (PUI) took off on a navigation training mission in a UC-12M. As they were climbing through 1,200 feet, they saw the leading edge of the left engine's forward cowling lift up. LCdr. Smith took control, reduced power, slowed the aircraft, and descended in a left turn toward NAS Sigonella.

During the descent, the second of four cowling fasteners released, again on the inboard side of the cowling. The cowling began moving erratically, bringing it in contact with the prop spinner. The cowling moved aft and hit the prop governor resulting in audible prop surge. It appeared that the cowling would soon break off and damage the wing and tail.

LCdr. Smith entered a left downwind and decided to shut down the engine to eliminate the prop blast on the loose cowling.

The crew declared an emergency. Lt. Jones resumed control while LCdr. Smith went through the emergency engine shutdown checklist. The aircraft landed safely.

Postflight inspection revealed the decals on the cowling latch hooks were misaligned, giving an erroneous locked indication.

LtCol. Guy Barr, USMC
Marine Aviation Detachment
Naval Weapons Center China Lake

During a night hop, as LtCol. Barr made his first pass over the target at 1,000 feet AGL, most of his AV-8B's cockpit warning and advisory lights flashed. The voice warning system announced "Manual fuel," and total darkness followed.

To verify that manual fuel had been automatically selected, he moved the throttle to see if the engine responded. It didn't. He felt for the manual fuel switch and regained control of the engine.

LtCol. Barr tried to restore electrical power by recycling the generator and battery switches. He also tried starting the APU, but the aircraft remained without AC or DC electrical power. During these attempts, LtCol. Barr flew his Harrier by illuminating the standby AOA, airspeed indicator and altimeter with his flashlight. Since the electric trim system didn't work, he had to maintain considerable pressure on the stick to control the Harrier.

After establishing limited communications with China Lake Tower with his PRC-90 and earphone attachment, LtCol. Barr tried to lower the landing gear using both the primary and emergency systems. He couldn't be sure that the gear was up, but another AV-8B on the ground verified that his aircraft's gear was retracted. The second Harrier's pilot also confirmed that the aircraft did not have the necessary performance for a vertical landing.

LtCol. Barr decided to try a wheels-up landing rather than an ejection. He also asked the second Harrier to taxi to the approach end of the runway to help in the landing. After a couple of practice approaches, LtCol. Barr made a successful wheels-up landing at 110 knots on the runway centerline. His aircraft came to rest 2,800 feet from the touchdown point. The only damage was to the 25mm gun system, and the aircraft was flying within a week.

A main wire bundle in the wing root had chafed and shorted both electrical systems. The mishap board concluded that if LtCol. Barr had delayed selecting manual fuel, the aircraft would have been lost.

LtCol. Barr received the Air Medal.

BRAVO ZULU

CHASE SETS THE PACE

From left to right: AMS2 Brad D. Nash, AMSAN William D. Ellis, HM2 Michael J. Buckelew, LCdr. Dennis F. Fandey, LCdr. Andrew C. Dodenhoff, Capt. Mike Braham, USMC; Capt. Paul J. Plominsky, USMC; Ens. Timothy Reynolds, AC1 Guy Oglesby, AC1 Bruce Murr, AC2 Sandra Mongeau and AC1 Mike Melillo. Not pictured: Ens. James A. Bishop.

Capt. Mike Braham, USMC
Ens. Timothy Reynolds
VT-25

Capt. Paul J. Plominsky, USMC
Ens. James A. Bishop
VT-27

LCdr. Dennis F. Fandey
LCdr. Andrew C. Dodenhoff
HM2 Michael J. Buckelew
AMS2 Brad D. Nash
AMSAN William D. Ellis
NAS Chase Field SAR

AC1 Bruce Murr
AC1 Mike Melillo
AC2 Sandra Mongeau
AC1 Guy Oglesby
NAS Chase Field ATC

Two TA-4J crewmen on a night familiarization hop ejected when their TA-4J's engine failed. Capt. Braham and Ens. Reynolds saw the flash of the ejection and assumed the role of on-scene commander, marking the position of both the crash site and the downed crew. Capt. Braham established contact with the two aviators and relayed their position to ATC. Capt. Braham and Ens. Reynolds remained on scene until they reached bingo fuel. They did not leave until their replacement was on station and in contact with the mishap crew.

Capt. Plominsky and Ens. Bishop, who replaced them, called Kingsville Approach to say they had 90 minutes of fuel and were available to help the SAR effort.

They received an immediate vector north and were passed to Chase Approach. Arriving over the crash site, Capt. Plominsky established a 2,500-foot orbit as he saw the mishap crew's strobe lights. When the SAR helicopter checked in, Capt. Plominsky and Ens. Bishop turned on their aircraft's lights, including lowering their landing gear to activate their landing light, to help the helo see the crash site. They also served as communication relay between the mishap crew and the helicopter.

As the SAR helo approached the crash site, Capt. Plominsky asked the mishap crew to fire off two pencil flares, but the helicopter could not locate the crew. Capt. Plominsky then asked the crew to light the night end of their Mk. 13 MOD 0 flare, which the helo saw. The SAR helicopter made a speedy night recovery and brought the mishap crew to NAS Chase Field.

The ATC staff at NAS Chase Field helped coordinate the SAR effort. AC1 Marr, approach controller on duty, helped the mishap aircrew and diverted air traffic around the crash site. The approach control supervisor, AC1 Melillo, activated the SAR net, while AC2 Mongeau activated the SAR Bay and controlled the approach and departure of the SAR helo. AC1 Oglesby activated the NALF Goliad tower to give assistance to the crash crew arriving from NAS Chase Field. ◄

"I've Got It, I Think"

By Lt. Craig M. Hoefer

General Dynamics, Fort Worth Division

WE had been flying ACM all week, two to three hops a day against A-4s and F-16s. One schedule included a 2 v 1 training hop. The weather was clear with the ever-present haze of south Florida. I was a little tired, but I had no doubt I could fly the mission.

We completed our crew and individual briefs then mustered in the ready room for the rules of engagement brief. The SDO gave us the brief, and we met with the bogey pilot who would be flying an F-16.

The bogey launched as a single, and we launched as a flight. We headed out to the warning area and completed our weapons and ACM checks. My lead pushed me out into combat spread, and GCI vectored us into the area. My RIO picked up a target, and both F-14s ran a classic intercept. We finally got a tally and, with a good visual I.D., I told my lead I could engage.

"Roger," he said and pitched off, nose high. In zone 5 burner, I passed the F-16 close aboard, took him one circle, and described the flight to my lead who positioned his Tomcat to move in. He told me he could engage, so I called, "I'm off."

"Engaged," he replied.

I pitched out of the fight, nose high, to keep my knots under control while staying in burner. The fight was directly behind me, and I strained in my seat to keep the engagement in sight.

My RIO was monitoring our airspeed and called, "We're at 21,000 feet, 300 knots. Get your nose down." I knew immediately that I was bleeding off all my knots while fixating on the fight. I instinctively put in left stick for a second then brought the stick back to neutral to allow my aircraft's nose to fall through. I knew I'd be in a position to re-engage quickly. I made a big mistake: I never checked my altitude.

"Hey!" my RIO screamed, "get your nose up!" Although he got my attention, he didn't make any sense since the fight was still in the same relative position to my aircraft. I finally broke my visual lock and scanned for the horizon. It was so milky that everything looked the same. I couldn't tell where I was.

At this point, training took over. I came inside the cockpit and scanned the instruments. The altimeter was a blur, and the thousands of feet were barely readable. My VDI was mostly black. I knew instantly that we were almost 90 degrees nose down, in burner, and probably supersonic.

I quickly retarded the throttles to idle and leveled the wings. I pulled for dear life. The aircraft held together as I increased my pull to 9.5 Gs. I remember telling my RIO, "I got it," while praying for both him and the aircraft to stay with me. Finally, I saw the nose break the horizon. I glanced at the altimeter. We were at 2,000 feet.

The entire incident, starting with my RIO's initial warning at 21,000 feet, took 26 seconds. My RIO earned his money that day. By keeping his situational awareness, he saved a 35-million-dollar aircraft and two Naval Aviators. ◄

Lt. Hoefer is now an S-3 pilot with VS-32.

One On One

By Lt. Mark Kelly

AFTER a year in the training command, I'd reached the stage I'd waited so long for. Flying TA-4s was great. I had about 60 hours in the Skyhawk and was feeling pretty good about myself; to say I was confident would be an understatement. Even before my first ACM hop in the final phase of my training, I knew I couldn't be beat. I would do whatever it took to shoot the other guy. I would pull harder, fly slower and roll faster.

My first ACM hops went well, and I looked forward to my first solo ACM. There would be no instructor, and I could do what I wanted, *when* I wanted. I'd get those shots I'd barely missed before.

The morning of the flight, I gave a good brief. My instructor and adversary was an F-14 pilot. OK, he had lots of experience, but I still knew I'd be able to take him. We launched and headed toward the MOA.

What could go wrong? The weather was great, the stick felt good in my hand, and I had a plan. About two minutes into our first engagement, there was a missile in the air – and it wasn't mine.

"Fox 2," the instructor called, then, "Guns, guns, guns!" It was painfully obvious that I had lost. It wouldn't happen again.

We started the second engagement, and it wound up like the first. A head-to-head pass, a hard turn, then a maneuver into the vertical. As I trailed my instructor up into the clouds, I thought how he was running the show. He was directing the fight and making me predictable. My nose fell through the horizon, and he broadcast another "Fox 2."

I promised myself that I would win the third fight. Once again, the engagement went into the vertical, but all I could think about was not getting shot a third time. Passing 80 knots, I watched my instructor's nose start to fall toward the horizon. Just a little longer and I would be able to fall in for the shot.

As the airspeed inched toward zero, I kicked in some rudder to bring the nose down, out of the vertical and toward my opponent. Suddenly, my airplane became a coke machine. What were those procedures? Neutral, neutral, lock harness, power below 80 percent, trim 0-4 nose up! This mess started at 18,000 feet, but now I was passing 15,000 and going down . . . fast!

"Fox 2." That jerk! Then, he asked me if I was checking neutral. I was.

As I saw 10,000 feet go by, I said to myself, "Passing 10,000 feet. Out of control, eject!"

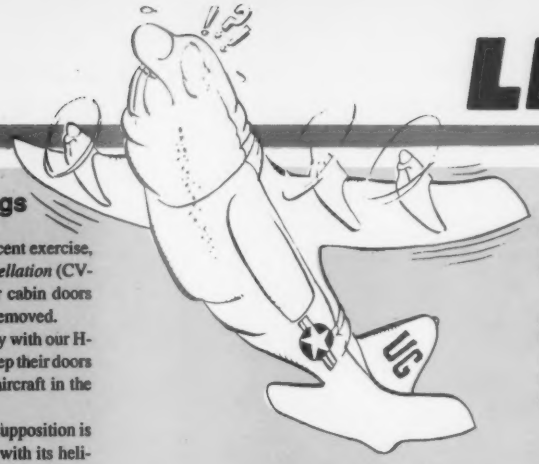
At the same time, the instructor called, "You're looking pretty low out there." No kidding.

Just as I started thinking about doing a tap dance on the skipper's rug, my A-4 decided to fly again.

Now, as a fleet aviator, I know how scary overconfidence can be. "He knows just enough to be dangerous" is a phrase that certainly applied to me. Nowhere in the ACM syllabus does it say that a mission objective is to shoot down the instructor. My aggression was misplaced. I let my own selfish desire to beat someone override flight safety and common sense. Next time you go one on one, remember what you're trying to accomplish. I learned that a little humility can go a long way.

Lt. Kelly is an A-6 pilot with VA-115.

LETTERS



Open Doors On Sea Kings

Bahia Blanca, Argentina—During a recent exercise, my squadron operated from USS *Constellation* (CV-64). I saw some H-3s flying with their cabin doors open and their upper personnel doors removed.

In overwater missions, we always fly with our H-3s' doors closed. I suppose your H-3s keep their doors open to make it easier to abandon the aircraft in the event of a water landing.

Could you clarify this point? If my supposition is correct, my squadron will begin flying with its helicopters' doors open, too.

TN Daniel Enrique Manen
EAH-2 Safety Officer

● There is nothing in NATOPS about flying with doors open or closed. As long as the aircraft commander knows the configuration, and everything has been properly secured within the cabin, it's the crew's option. – Ed.

Re: Fire Starters

APO New York – I read and enjoy *Approach* when I can get it. It's interesting and informative. Most of the safety tips are just good common sense and apply regardless of your branch of the service or aircraft.

The December '89 issue had a letter from J.R. Whamond about fire starters. The Army issues a fire starter similar to the one he describes. It is the Fire Starter, Aviation Survival, Magnesium, National Stock Number 1680-01-160-5618. It is manufactured by Doan Machine and Equipment Co., Inc., Box 21334, South Euclid, OH 44121.

CW3 Roger A. Minyard, Jr., USA

● Thanks for the US Army contribution! Glad to hear from you. – Ed.

Re: Uncontrolled Herk (July '90)

This Anymouse story brought back vivid memories of flying TC/EC-130s with VQ-4. As a 2P, I was involved in an airborne discussion about whether to shut down an engine with an intermittent prop low-oil light. Our NATOPS said that when that light came on, we should consider shutting down the engine. However, if you have an emergency, you have to shut down before landing. Our aircraft had a history of consuming prop oil, which was replaced during scheduled maintenance. *Two* senior aircraft commanders – each with more than 3,000 hours in several different aircraft – decided to leave this aircraft's engine running contrary to NATOPS. As junior pilots, we decided to follow NATOPS for an uneventful, night three-engine landing.

After start-up the following rainy night, our ailing engine's gearbox failed. I was glad it had not failed on short final, or worse, at our max gross takeoff weight of 164,000 pounds – in the rain.

NATOPS is the professional aviator's bible. Experience helps in many situations, but it can also blind you. Know your limitations and listen to what others have to say. They may see something you don't.

Lt. Paul Beaumont

Re: Aborted Takeoffs: the Hard Way (June '90)

USNS Roosevelt Roads, P.R. – We all know how invaluable on-the-spot emergency-response training can be. However, should the training be at the expense of safety? I agree with Lt. Yukish. Before such training, brief your crew. The "emergency" situation may not be unexpected, but you should still use the proper corrective procedures. The lesson in this story was learned with unnecessary risks to the crew and equipment.

AZ1(AW) James L. Hughes

Re: Killer Cockpit FOD (Jun '90)

FPO Miami – Is it necessary to scare the S-3 community into changing its carefully considered SOP? The only "killer FOD" was in the article, itself!

Please explain how a pen could accelerate to 100 mph from its resting place at the base of the glare shield and hit the COTAC's mask – a distance of 4 feet. Admittedly, toward the end of the stroke, the pen might be traveling at that speed, but the COTAC (and his mask) would have been moving at the same speed, giving a relative velocity of a lot less than 100 mph. Clearly the pen was not accelerating; the COTAC was.

He is moving down the catapult at 60 feet per second squared (assuming the catapult length is 225 feet and gives an end speed of 130 knots). Changing the end speed by 20 knots, or the catapult length by 50 feet, makes no appreciable difference. The acceleration force is roughly two G's.

At some point during the stroke, the pen breaks loose from its resting place and stops accelerating. Meanwhile the COTAC continues to accelerate into the pen. Accelerating the COTAC at 60 feet per second squared in 4 feet gives a relative velocity of 15 mph, roughly the same speed the pen would have if it had been dropped from a height of 7 feet. Could this speed cause the damage shown in the photo of the oxygen mask? Not in a million years! To achieve the claimed impact speed of 100 mph, the required acceleration would have had to have been something near 84 G's! Not likely.

There are valid reasons for aircrew to wear oxygen masks in flight. There are also valid reasons for not wearing masks. Let's not scare the S-3 community into changing squadron SOPs based on the mindless drivel from one squadron attempting to rationalize its use of masks.

Lt. Brian D. Wauer, VS-24

● Sigh-hh-h! Perhaps the speeds were not right, but as you said, the pen could have reached 15 mph. Although it doesn't sound very fast, that speed equates to 22 feet per second. Assuming that this pen could score a direct hit, we're talking about forces that not only could, but actually did break an oxygen mask housing. It is hard to ignore the obvious implications of the photo of the mask.

So, some of you folks out there don't wear your masks during launch or recovery. We think you should! The mask provides protection, and oxygen may be needed in an emergency off the cat. Fumbling with a mask dangling from your helmet takes time and a free hand.

Finally, some recent S-3 mishaps have proven the necessity for keeping your helmet on during ejection. – Ed.

Re: Ejection Issue (July '90)

Va. Beach, Va. – Your ejection issue was outstanding. I've made a "Martin-Baker penetration," and I found each article educational and enjoyable. The graphics and layout were particularly noteworthy. Keep up the good work.

Lt. Christopher Cinnamon
VF-101
NAS Oceana

Re: Just Hanging Out (July '90)

Selfridge ANGB, MI – Lt. Roorda would have faired much better if he had used a personnel lowering device (PLD). This Air Force item consists of a back pad and 150 feet of flat webbing for getting out of high places, such as trees. See USAF Tech Order 14D3-11-1, Chapter 5, pp. 5-138 and 5-139, and Chapter 18.

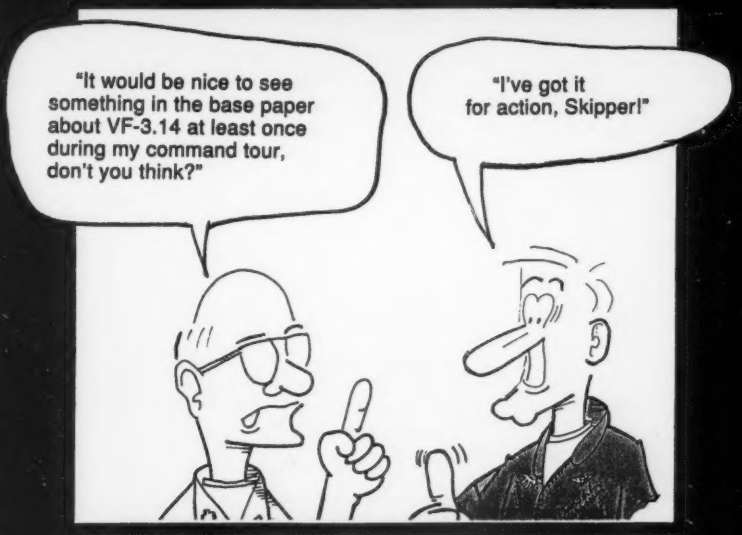
SrMSgt. Frederic J. Conway, USAF
191st Life Support

Approach welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: *Approach* Editor, Naval Safety Center, NAS Norfolk, VA 23511-5796. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

☆ U.S.GOVERNMENT PRINTING OFFICE: 1990— 727-007/20022

BROWNSHOES IN ACTION COMIX

The kind real aviators like
By Lt. Ward Carroll



Fighting PI's Get "Second Place" in FFARP Exercise

By Lt. "Dangerboy" Jones, VF-3.14 PAO

VF-3.14 recently completed the Fleet Fighter ACM Readiness Program (FFARP) as part of their turnaround training before the next deployment on a carrier to be named later. The squadron crews found the nine-week exercise to be very rewarding and "a real learning experience."

"Some people might say we didn't do very well," Cdr. Richard LeMuncher, squadron commanding officer, said at a recent All Officers Meeting. "I look at it kind of like we got second place, like we won the silver."

"Don't let anybody tell you there aren't any points for second place," Cdr. Bob Stalemate, squadron executive officer, offered. "Just by showing up we automatically got several points toward some annual TYCOM awards."

Photo by Lt. Jones, VF-3.14 PAO

Cdr. LeMuncher, C.O. of VF-3.14 addresses the troops following FFARP saying, "Believe it or not, I've seen worse . . ."

A month and a half after its scheduled completion date, the squadron wanted to celebrate the end of FFARP following the last sortie in typical Fighting Pi's fashion. "We planned to do the traditional Pi Diamond after the final 4vX hop," Cdr. LeMuncher said, "But one jet went down on deck, a second had to RTB early for gas and Dash-3 decided to do a GCA for controller training. In any case,